INTRODUCTION

Naval Base Kitsap (NBK), located in Kitsap County, Washington, is the largest naval installation in the Commander Navy Region Northwest (CNRNW) Area of Responsibility, and is the third largest installation Navy wide. Formed in 2004, it includes the former Naval Submarine Base Bangor, Naval Station Bremerton, and Naval Undersea Warfare Center (NUWC) Keyport, as well as Manchester Fuel Depot, Naval Hospital Bremerton, Jackson Park Housing Complex and satellite properties in Washington and Alaska. NBK provides world class service, programs and facilities to meet the needs of hosted warfighting commands, tenant activities, crews, employees, and service member families.

NBK is conceivably the most complex base in the Navy, hosting approximately 70 tenant commands including Strategic Weapons Facility Pacific (SWFPAC), Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS&IMF), NUWC Keyport, CNRNW, and Submarine Group 9. NBK provides base operating services to homeported fleet units including SSBN, SSGN, and SSN class submarines as well as a nuclear aircraft carrier (CVN). NBK provides critical infrastructure not commonly found elsewhere to support a world-class shipyard, a Marine Corps Security force of approximately 800 individuals, the largest U.S. Coast Guard Maritime Force Protection Unit in the nation, the largest Navy underground fuel storage facility in the continental U.S, a heavyweight and lightweight torpedo facility, and unmanned underwater vehicle research and testing facilities. PSNS&IMF holds the HW and stormwater permits in Bremerton. NUWC Keyport holds the HW permit for the NBK Keyport facility.

NBK has $10.6B in infrastructure including 24 piers,1,850 buildings, and seven drydocks, including the only CVN capable drydock on the west coast, and a drydock certified for loaded SSBNs. Located approximately 20 miles west of Seattle, it includes 11,262 acres, 60% of which is forested. The annual payroll is $2.3 billion with a local economic impact of $4.6 billion, which provides approximately 54% of Kitsap County's economy. Nearly 17,000 civil service, 16,200 military personnel, and 7,500 contractors are currently employed at NBK. The surrounding community is semi-rural, with 395 square miles of land and over 250 miles of marine shoreline.

BACKGROUND

By 2015, the CNRNW Environmental Management System (EMS) had transitioned to an installation-specific program to provide greater mission-specific emphasis. The EMS identified generation of hazardous waste (HW), discharges to water, emissions to air and unintended releases or spills as Significant Aspects. EMS implementation challenges included funding constraints, environmental staff vacancies, outreach to installation tenant and contractor personnel, document maintenance, and communication of roles and responsibilities. In spite of these constraints, NBK maintained ISO 14001 conformance as part of the CNRNW EMS and, following an external audit in May 2015, successfully declared conformance again in September 2015.

The Commanding Officer meets with the NBK Environmental Director weekly to review compliance issues, project status and development of environmental solutions. The Director manages a staff of 30, including engineers, environmental protection specialists, biologists, a chemist, a historic architect. In addition,, and an archeologist whose time is split between supports both

Government to Government (GtG) consultations and archeological work. The Environmental Division is within the Public Works Department with reach-back support provided by Naval Facilities Engineering Command.

In addition to the large number and varied missions of the tenants, NBK has challenges unique to the northwest. Most properties fall within the Usual and Accustomed (U&A) grounds and stations of one or more of five Native American tribes: the Skokomish Indian Tribe, Port Gamble S'Klallam Tribe, Jamestown S'Klallam Tribe, Lower Elwha Klallam Tribe, and Suquamish Tribe. Navy actions that may impact tribal access for fishing, quantity of fish or fish habitat are subject to consultation and potential mitigation. Daily staff level communication is common, with formal meetings among tribal leadership and the Commanding Officer (CO) occurring every few weeks. Additionally, nine animal species have been listed as threatened or endangered under the Endangered Species Act (ESA), including fresh water and saltwater salmonids, rockfish, marine mammals and terrestrial birds. NBK has heavily regulatory oversight which includes frequent inspections by regulatory agencies.

NBK has developed and maintains environmental plans including six Spill Prevention and Control and Countermeasure (SPCC) plans, and installation-wide hazardous waste, stormwater, and air program management instructions; each are reviewed and updated annually. The Bremerton Class 2 Facility Operation Manual and the Bangor Oil & Hazardous Substance Facility Operations Manual were updated within the last year per the Washington Administrative Code 173-180-460 and 33CFR 154-320. The Bangor spill response plan was also updated during the 2016 update of the Navy Region Northwest Integrated Contingency Plan. NBK operates under the EPA multi-sector general permit for stormwater discharges at Bangor and Keyport; individual National Pollution Discharge Elimination System (NPDES) permits are held for discharges to Kitsap county sanitary sewer, and discharges of drydock non-contact cooling water to the Hood Canal. Annual stormwater Comprehensive Site Inspections were completed for Bangor and Keyport. NBK Bremerton and Bangor each operate under synthetic minor air permits. Jackson Park and Manchester operate under natural minor air permits. PSNS&IMF and NUWC Keyport hold HW and some other permits for Bremerton and Keyport, respectively.

SUMMARY OF ACCOMPLISHMENTS

Environmental Planning NBK maintains a robust program of environmental review, analysis, consultation, permitting and follow-on compliance monitoring. In FY15/16, 20 consultations were initiated under the Endangered Species Act (ESA), 73 under the National Historic Preservation Act (NHPA), and 133 letters were sent to tribes, either initiating GtG consultations, or documentation of their progress. Approximately 1,400 projects were reviewed for potential impacts to the environment. Substantial environmental planning and conservation resources are expended to support the NBK mission. Significant accomplishments include:

Land Water Interface NBK completed the Environmental Impact Statement (EIS) and on 8 September 2016 issued the Record of Decision for the Land Water Interface project at Bangor. The project involves installation of a fence system across the environmentally sensitive intertidal area at two locations at Bangor, completing the fence system that provides critical security around strategic national assets. The EIS included

consultations with the US Fish and Wildlife Service, National Marine Fisheries Service, Washington Department of Ecology, and five Native American tribes. Extensive discussions with the tribes, were initiated in 2008 to identify impacts to treaty protected resources and identify mitigation actions. The Navy agreed with the Skokomish Indian Tribe's mitigation proposal to use the Skokomish River Restoration project being developed by the US Army Corps of engineers under the Water Resources Development Act. The Navy and Skokomish Indian Tribe signed a Memorandum of Agreement (MOA) on 3 March 2016 to document the mitigation for the LWI project and two additional Navy projects. The Navy also agreed to mitigation proposals by the three S'Klallam/Klallam tribes to enhance shellfish beaches by seeding develop a shellfish management plan, and fund a portion of the Kilisut Harbor project, which will restore habitat by replacing a causeway with a bridge.

Pier and Support Facilities for the Transit Protection System On 24 August 2016, NBK completed the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a project to construct a pier and upland facilities at the US Coast Guard (USCG) Station at Port Angeles, WA. The facility will act as a forward operating station for the vessels which guard SSBN submarines as they transit to/from Bangor to the dive point in the Strait of Juan de Fuca. The project provides critical mission support by eliminating the need for waivers from escort crew rest requirements.

The EA included an enhanced public involvement process. The Description of Proposed Action and Alternatives (DOPAA) was released for a 30-day comment period, and a public meeting was held in the City of Port Angeles. Public and agency comments led to the development of a new alternative that reduced potential impacts to threatened habitat, a public boat launch, a popular dive site, and an on-water facility operated by the Washington States Pilots Association. NBK conducted numerous meetings and briefings with public groups, agencies and tribes to ensure the community had a full understanding of the new alternative. The draft EA was released for a 60-day public comment period vice the normal 30-days. The enhanced public involvement reduced potential controversy associated with the Navy constructing a pier outside of one of its installations, and allowed for an accelerated FONSI schedule.

The project involved considerable consultation with the S'Klallam/Klallam tribes. Early discussions on Treaty mitigation led to an MOA signed on 15 June 2016 whereby the Navy agreed to remove nearshore fill and restore the shoreline on state owned property in the Port Angeles harbor. The Navy also developed a Compensatory Mitigation project to do similar shoreline restoration work on USCG property. The projects are scheduled for implementation in FY17.

Fender Pile Replacement for Piers 4 and 5 NBK Bremerton was established in 1894 and many of the facilities are WWII vintage. In FY15, significant deterioration of fender piles on Pier 4 was identified. NBK completed the NHPA and ESA consultations, and submitted the Marine Mammal Protection Act (MMPA) permit application to the National Marine Fisheries Service, required due to acoustic impacts to aquatic species. New information on the condition of the Pier 5 piles was then received, which was added to the Pier 4 MMPA permit application. Adding the Pier 5 work to the Pier 4 documents eliminated the need for another stand-alone set of consultations, permitting and NEPA documentation. In-water work was started July 18, 2016 on Pier

4, and was followed by the additional pile work on Pier 5. In-water work was completed on November 17, 2016.

Railroad Culverts The Navy owns 50 miles of railroad from Bangor and Bremerton to Shelton, WA. In line with construction practices of the 1940s, the Navy installed approximately 300 culverts along the railroad without full consideration these culverts would present barriers to fish. Today, culverts have become a major issue in the Northwest. This was solidified when it was ruled in Federal court that fish-blocking culverts owned by the State of Washington violate Tribal Treaty Rights. NBK completed a comprehensive survey of culverts in fish bearing streams along the railroad. Washington Department of Fish and Wildlife (WDFW) barrier assessment was conducted for 53 culverts, and reconnaissance was performed for 74 culverts. Preliminary designs and cost estimates were developed for replacement of 33 existing culverts for fish passage and 3 culverts for malfunctioning outlets and slope (total 36). Each culvert was assigned a Fish Passage Priority Index per WDFW criteria to prioritize funding for their repair or replacement. Budget requests to fix the culverts were submitted.

Sturgeon Street Culvert Replacement Two culverts that were a complete barrier to fish passage were replaced with a 12 foot equivalent diameter arch culvert. The $1.2 M project at Bangor replaced two undersized and lengthy culverts that conveyed water under roadways and a parking lot. The project installed the larger culvert and rerouted the stream to minimize the length of the culvert. The project also included re-grading 250 feet upstream and downstream of the new culvert, and re-vegetating the area with native species. The project used state-of-the-art design criteria from the Washington Department of Fish and Wildlife.

The stream supports ESA-listed Hood Canal summer run chum and steelhead trout, as well as sea-run cutthroat trout. Fish will gain access to 5,500 linear feet of stream habitat upstream of the culvert, and stream conditions will improve as sediment and detritus resume its natural flow downstream of the culvert. The Navy consulted with permitting agencies, and the Washington Department of Fish and Wildlife and tribes, and the design was revised based on their input. The construction and permitting coordination effort yielded many lessons-learned that are applicable to the hundreds of Navy and non-Navy culverts across the northwest.

Cattail Estuary Restoration NBK completed the third year of monitoring for the project to restore 13.7 acres of intertidal, freshwater forest/shrub, riparian, and upland habitat, and 2,800 feet of reestablished stream channel. The monitoring identified that sediment erosion was not advancing as rapidly as anticipated, so a contract was awarded to excavate stream channels to improve the rate of erosion. Additionally, 300 additional willow stakes were planted to test the effectiveness of the future planting strategy prior to larger scale implementation. No significant impacts to the oysters and eelgrass beds were observed. Tidal access to the basin was restored in 2012 by removing an existing causeway and installing a bridge to allow free flow to and from the Hood Canal.

Bremerton B431 MOA with SHPO
When a proposed $107M seismic upgrade to the PSNS Machine Shop resulted in adverse effects to the historic building, NBK developed a Memorandum of Agreement (MOA) with the Washington State Historic Preservation Officer (SHPO) under the NHPA. The MOA, signed in July 2015,

stipulates that NBK conduct an updated survey and evaluation of buildings within the Controlled Industrial Area of PSNS, document the 2 historic machines that will be removed from the building as a result of the project, restore a portion of the stone parapet on the Machine Shop, and remove moss and clean the brick on the building as mitigation measures to resolve the adverse effect.

NBK maintains a robust GtG relationship with local tribes and during FY15/16, successfully completed GtG consultations and signed MOA's with four Native American tribes to mitigate impacts to Treaty protected resources resulting from four separate projects.

Additionally, one Cooperative Agreement (CA) worth $1.3M was awarded to the Skokomish Indian Tribe under the Sikes Act to improve the beach substrate and seed a beach with shellfish as mitigation for the Explosive Handling Wharf 2 project.

Waste Reduction
NBK operates an aggressive waste management and reduction program resulting in significant cost savings, reduction in toxicity of wastes and support of mission readiness. The Washington State Department of Ecology (WDOE) conducted annual compliance inspections with no significant deficiencies identified. The following accomplishments are significant and technically transferable:

- HM reuse was successful via the Ship-to-Shore Hazardous Material (HM) Management and Locker Program. Lockers were installed for collection of excess HM from submarines, ships, and other vessels. 2015 NBK HM reuse savings totaled $293,599 and $87,747 as HM re-procurement cost avoidance and waste disposal cost avoidance, respectively.

- NBK implemented a compact industrial wet-glass glove box cleaning system for pump repair. This hybrid technology cleans, removes rust, foreign particles and oxides rapidly and efficiently, and profiles sensitive metal components. The process is user friendly, safe, environmentally compliant, and reduces waste and labor by a minimum of 50% compared to previous processes.

- NBK installed and implemented a new efficient paint dispensing & mixing equipment system at the vehicle body repair and repainting shop. In FY15/16, up to 80% of historically generated annual paint shop liquid waste was either significantly reduced, or totally eliminated by the new process. Was it reduced or eliminated 80%? What was the total volume eliminated?

- Installed a new Floor Scrubber Water Recycling System at Bangor in 2015. The system collects, filters, and recycles wastewater from floor mopping in industrial environments. Water savings and treatment cost avoidance was $138,000 per year. Based on installation of a flow meter between July 2015 and January 2016, 1,100 gallons of HW wastewater was eliminated.

- Twelve solvent parts washers with solvent life extension filtration were reused from NASWI at numerous NBK shops. These innovative parts washers use Hazardous Air Pollutant free and Volatile Organic Compound compliant eco-friendly solvent blends. The parts washer's filters extend the solvent life from months to years.

- The chemistry laboratory implemented a new metals testing practice that uses multi-element mixtures instead of single element solutions. With single element solutions only a fraction of the solution is used, and the remainder of the solution is discarded as HW. The new process uses the entire contents of each multi-element mixture and eliminates approximately 120 gallons of HW annually.

- A new ion chromatograph was installed at the PSNS&IMF chemistry lab which uses capillary technology which generates ~1/100th the volume of HW previously produced.

- NBK repurposed 4,400 pounds of sodium bicarbonate from industrial application to the Bangor swimming pool, 2,000 pounds of salt from NUWC Keyport to the Base Operating Services Contractor (BOSC), and 250 pounds of latex paint from Naval Magazine Indian Island to Bangor.

- Over 14,426 gallons of B20 biodiesel fuel blend and 170,770 gallons of E85 ethanol fuel were issued.

- A total of 16,082 tons of material were recycled, reducing waste generation and resulting in cost avoidance of $662,923.

Environmental Compliance

Storage Tank Management NBK manages 286 above and underground storage tanks (ASTs/USTs) with a combined capacity of over 2.2 million gallons. In FY15/16, several projects were completed to decrease the likelihood of releasing fuel to the environment, included the following:

- Replaced four thirty-year old single walled steel USTs with state-of-the-art double wall reinforced fiberglass tanks.

- Removed eight thirty-year old single walled steel USTs.

- Drained and emptied two heating oil USTs and removed them from service.

- Installed canopies over two filling stations to reduce the potential for storm water contamination.

- Upgraded the containment surface that served the parking area for fuel tanker trucks from asphalt to concrete.

- Inspected two-500,000 gallon ASTs, completed structural repairs, resealed the interior and repainted the exterior.

WDOE conducted compliance inspections of 49 USTs in FY15/16, and identified no issues of non-compliance with state or federal regulations. Additionally, they conducted onsite review of the removal/installation of 12 USTs.

Stormwater An Illicit Discharge Detection and Elimination (IDDE) manual was developed and implemented to identify and correct illicit discharges to the Bremerton stormwater system. IDDE activities occurred for several years prior to finalization of the manual in FY16, however these activities were more reactionary in nature and lacked an organized recordkeeping and tracking system for inspections, testing and corrective actions. The IDDE manual provides a more structured approach to inspections and response to deficiencies. Thus far, more than a dozen deficient conditions have been identified and corrected under the new program.

Air Emissions NBK has approximately 250 regulated air emission sources, is subject to federal and state greenhouse gas (GHG) reporting requirements, complies with four

federal area source National Emission Standards for Hazardous Air Pollutants (NESHAPs) and has 31 Notice of Construction permits.

NBK obtained the permit from the Puget Sound Clean Air Agency (PSCAA) and awarded an $8.7M contract to install new emission controls on five project emergency generators that provide backup power for the three boilers at the Bremerton Steam Plant. The emission controls target is 70% reduction in carbon monoxide emissions, and restoration of operational flexibility restricted over the recent past under new federal air quality regulations. The project is in progress and scheduled for FY17 completion.

NBK has added to its five year trend of declining GHG emissions, demonstrating a reduction of 8.0% at Bremerton and 3.7% at Bangor in CY15. (CY16 data is not yet available). NBK Bremerton and Bangor have reduced GHG emissions 21% and 17% respectively since CY2011. The reductions are due to replacement of old with more efficient boilers, and a general trend of warmer winters.

PSCAA conducted annual air compliance inspections at Bremerton and Bangor with no findings documented.